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A LIST OF THE AMPHIBIANS AND REPTILES OF ARIZONA, WITH NOTES ON THE SPECIES IN THE COLLECTION OF THE ACADEMY

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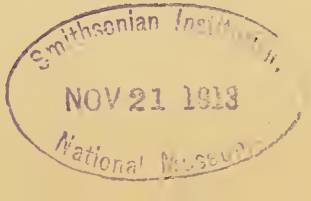
Early in March, 1912, the authors of this paper arrived in Yuma and began the gathering of a representative collection of Arizonan reptiles and amphibians. March and the first week of April were spent there and in the vicinity of Tucson, where large collections were secured. The senior author then returned to San Francisco, leaving Mr. Slevin to continue the work in various parts of Arizona throughout the summer. Mr. John I. Carlson, in 1910, had made considerable collections in Yuma and Maricopa counties under my direction. Our thanks are particularly due to the late Mr. Herbert Brown of Tucson, who is well known as a student of the natural history of Arizona, for his kind aid, gifts of specimens, and advice as to favorable collecting grounds. Professor Brown, of the University of Arizona, and Mr. Bancroft very kindly gave us a number of specimens. The authorities of the Carnegie Desert Laboratory at Tucson also were most generous in their assistance, with gifts of specimens and the loan of camping equipment which made possible the trip to the summit of Mt. Lemon.

The Arizonan collections at hand number about three thousand specimens, and include a large majority of the species known from the state. Some species have been credited to

1

November 3, 1913



Arizona without sufficient evidence of their occurrence there. The following list is thought to include all species now known to live in Arizona. Those which the Academy has not yet secured from within the borders of that state are indicated by a star preceding the number. Following this list are given notes on the species represented in our collections.

List of the Amphibians and Reptiles of Arizona

* 1. Ambystoma tigrinum
2. Hyla arenicolor
3. Bufo lentiginosus woodhousii
4. Bufo punctatus
5. Bufo alvarius
6. Bufo cognatus
7. Scaphiopus couchii
* 8. Scaphiopus hammondii
9. Rana pipiens
10. Kinosternon sonoriense
11. Terepene ornata
12. Gopherus agassizii
13. Coleonyx variegatus
14. Dipsosaurus dorsalis
15. Sauromalus ater
16. Crotaphytus collaris baileyi
17. Crotaphytus wislizenii
18. Uma notata
19. Holbrookia maculata approximans
20. Holbrookia texana
21. Callisaurus ventralis
22. Uta stansburiana
23. Uta ornata
24. Uta graciosa
25. Sceloporus jarrovii
26. Sceloporus clarkii
27. Sceloporus magister
28. Sceloporus consobrinus
*29. Sceloporus scalaris
30. Phrynosoma hernandesi
31. Phrynosoma solare
*32. Phrynosoma cornutum

*33. Phrynosoma modestum
34. Phrynosoma platyrhinos
35. Phrynosoma m'callii
36. Heloderma suspectum
37. Gerrhonotus kingii
38. Cnemidophorus gularis
*39. Cnemidophorus arizonae
40. Cnemidophorus melanostethus
41. Cnemidophorus tigris
*42. Eumeces obsoletus
*43. Leptotyphlops dulcis
44. Siagonodon humilis
45. Lichanura roseofusca
46. Chilomeniscus cinctus
47. Sonora semiannulata
*48. Sonora episcopa
49. Sonora occipitalis
*50. Gyalopium canum
51. Rhinocheilus lecontei
*52. Heterodon nasicus
53. Salvadora grahamiae
*54. Phyllorhynchus brownii
55. Hypsiglena ochrorhynchus
56. Diadophis regalis
57. Lampropeltis pyrrhomelaena
58. Lampropeltis splendida
*59. Lampropeltis conjuncta
60. Lampropeltis boylii
61. Bascanion flagellum frenatum
62. Bascanion piceum
63. Bascanion semilineatum
64. Bascanion taeniatum
65. Arizona elegans
66. Pituophis catenifer deserticola
67. Thamnophis vagrans
68. Thamnophis eques
69. Thamnophis marcianus
70. Thamnophis megalops
71. Thamnophis angustirostris
72. Trimorphodon lyrophanes

73. Tantilla nigriceps
74. Tantilla wilcoxi
75. Elaps euryxanthus
*76. Sistrurus catenatus edwardsii
77. Crotalus molossus
78. Crotalus atrox
79. Crotalus tigris
80. Crotalus confluentus
81. Crotalus oregonus
82. Crotalus cerastes
83. Crotalus mitchellii
84. Crotalus lepidus
85. Crotalus pricei
*86. Crotalus willardi

Notes on the Species in the Collection of the Academy

2.—**Hyla arenicolor** Cope

Forty-three adult specimens are at hand, and the collection includes also some tadpoles and young. In Pima County this tree-toad was collected at East Sabino Basin, June 19, 1912; in Pima Canyon, June 7, 1908; at the steam pump eighteen miles north of Tucson, May 16–18, 1912—all in the Catalina Mountains. In Cochise County this species was found in Ramsey Canyon in the Huachuca Mountains, July 7, 1912. In Maricopa County some were secured at Cave Creek, April 17, 1910; and in Coconino County three were caught at Oak Creek, Sept. 2–4, 1912. They usually were found sitting on boulders in rocky streams.

3.—**Bufo lentiginosus woodhousii** Girard

We have secured twenty-one adults and a number of young toads of this kind. Of these, eight are from Yuma, Sept. 10–21, 1912, and Dec. 31, 1909; three from Phoenix, March 16, 1910, and Sept. 13, 1912; five were collected at Cave Creek, April 2—Sept. 14, 1910; and five were caught at Fairbank, August 12–18, 1912. At Yuma, they were found at night under the electric lights.

4.—**Bufo punctatus** Baird and Girard

We have at hand only five Arizonan specimens of this toad. Nos. 17581, 17582, and 20871 were collected at Cave Creek, Maricopa County, May 16–27, 1910. No. 33847 was found by Mr. Herbert Brown in the foothills of the Catalina Mountains, 18 miles northwest of Tucson, Pima County. No. 35002 was secured in Ramsey Canyon, Huachuca Mountains, Cochise County, July 7, 1912.

5.—**Bufo alvarius** Girard

Thirty-one examples of this little-known toad are now before us. Twenty-six of these (33728 to 33752 and 33799) were caught at Yuma, Sept. 10–21, 1912. Many of these are young, showing the characteristic spotted style of coloration which disappears with age. Nos. 13166 to 13168 were secured in Phoenix, July 10–12, 1907. Two very large specimens (Nos. 35322 and 35323) were collected on the desert close to Tucson, August 22, 1912.

6.—**Bufo cognatus** Say

Forty-six toads (Nos. 33753 to 33798) of this species were collected at Yuma, Sept. 10–21, 1912. We did not find this toad at Tucson, although it is known to occur there, but we have seen specimens from Phoenix. The Yuma specimens were caught at night under the electric street lights.

7.—**Scaphiopus couchii** Baird

This spade-foot toad was found by us only at Fairbank, Cochise County, where eight specimens (Nos. 35227 to 35234) were collected August 12–18, 1912. They were caught in the water in a cattle-guard on the railroad. This species is said to be common at Tucson.

9.—**Rana pipiens** Schreber

We have about one hundred and thirty adult specimens of this frog from Arizona, besides eggs and many tadpoles. Most of these are from the Santa Cruz River at Tucson, but the species was found also at Yuma, Yuma Co.; Oak Creek, Coconino Co., Sept. 1–3, 1912; Cave Creek, Maricopa Co., April 2—May 27, 1910; Phoenix, Maricopa Co., March 11–31, 1910; Sabino Canyon, Santa Catalina Mountains, April 4 and

June 19, 1912; at the steam pump eighteen miles north of Tucson, Pima Co., May 16–18, 1912; and at Fairbank, Cochise Co., August 13–17, 1912. Eggs were found at Tucson, March 25, 1912; and large tadpoles were taken at the same time.

10.—**Kinosternon sonoriense** Le Conte

We have secured twenty Arizonan specimens of this mud-turtle. Two (Nos. 17282 and 20643) were collected at Cave Creek, Maricopa Co., April 19 and June 29, 1910. One (No. 35157) was caught at Fairbank, Cochise Co., Sept. 1912. The other seventeen (33850 to 33866) are from the Santa Cruz River, near Tucson, April 17—June 4, 1912. This species lives also in the Colorado River at Yuma, whence we have a specimen (No. 33403) from the Californian side of the river, collected April 8, 1912. This turtle has been recorded also from Ash Creek, Guadalupe Canyon, Sabino Canyon in the Santa Catalina Mountains, and from the Huachucas.

Yarrow recorded a specimen from Ft. Yuma, California, as *Cinosternum flavescens;* but I know of no evidence that this species occurs in Arizona. Certainly all of the Yuma specimens sent to the Academy—six or eight before the fire—have been *Kinosternon sonoriense.*

It would seem that this turtle is generally distributed throughout the Gila River and its tributaries. Whether it ascends the Colorado River above the Gila is not known.

Captive specimens ate meat voraciously under water. The Tucson specimens were caught with hook and line baited with meat.

11.—**Terrapene ornata** (Agassiz)

The specimen of this turtle collected by Mr. Price at Fort Lowell, near Tucson, June 10, 1893, has remained the only Arizonan record of this box tortoise. We now have at hand eight alcoholic specimens (Nos. 35148 to 35155) and one skull (No. 33156) from Fairbanks, Cochise County, August, 12–18, 1912. These specimens were found in the grass and weeds along an old railroad track about a mile out of town. Some of these turtles have the plates of the carapace nearly smooth, while others are striated. Some are nearly unicolor, while others are very distinctly rayed.

12.—**Gopherus agassizii** (Cooper)

Although it has long been known that this turtle is common in Arizona, we have found only two definite records of localities where it has been taken. Cox mentioned its presence near Tucson, and Ditmars records a specimen secured near Phoenix. Mr. Herbert Brown sent us a fine large pair from Ehrenburg, Yuma County, but these unfortunately were destroyed in the great San Francisco fire of April, 1906. Mr. Brown tells us that this species is fairly common in the Tortolita and Santa Catalina Mountains, in Pima County.

Our collection includes six specimens. These are one young specimen from Yuma; one (No. 13165) taken twenty miles west of Tucson, March 9, 1908; a half-grown specimen (No. 33867) and an adult (No. 33868) from the desert near Tucson; and two young (Nos. 34263 and 34264) found near the steam pump eighteen miles north of Tucson, May 15, 1912.

13.—**Coleonyx variegatus** Baird

We collected fifty specimens of this gecko during the spring and summer of 1912. Eleven (Nos. 33491 to 33501) were found at Yuma, March 11–19. Three (Nos. 35341 to 35343) were secured at Gunsight, Pima Co., April 16–22. Thirty-six (Nos. 33890 to 33925) were collected near Tucson, April 8–13.

At Yuma they were found on the desert under tin cans, old clothes, boards, and stones. The Gunsight and Tucson specimens were found under stones. Near Tucson they seemed to live in colonies near the tops of certain low rolling desert hills near the lower edge of the giant cactus belt. On some of these hills we found six or eight specimens under stones six to twenty inches in diameter, while on other similar hills none could be found, although nearly every suitable stone was turned. Later in the season we could find none, and it is probable that they descend into holes as the ground dries and the weather becomes warmer. They often utter a little squeak when caught.

No. 33922, Tucson, March 26, 1912, in life was colored as follows: Limbs dark flesh. Dark markings on head; body and tail deep liver brown. Light markings on tail and body bright lemon yellow, on head grayish yellow. Lower surfaces of head, body, and limbs pure white, of tail light lemon yellow.

14.—Dipsosaurus dorsalis (Baird and Girard)

Our present collection contains seventy specimens of this lizard. Sixty-seven of these were collected at Yuma, March 11–21, 1912, and June 8–25, 1910. One (No. 34209) was shot at Papago Wells, Yuma Co., April 16–22, 1912. Two (Nos. 17284 and 17285) were secured at Cave Creek, Maricopa County, April 20, 1910.

Of these specimens, sixty-two have the rostral separated from the nasal on each side by two granules, one has two on one side and none on the other, while six have but one granule intervening on each side. The femoral pores vary from 18 to 26; being 18 five times, 19 thirteen times, 20 twelve times, 21 twenty-one times, 22 twenty-two times, 23 twenty-nine times, 24 seventeen times, 25 nine times, and 26 three times.

15.—Sauromalus ater Duméril

The single Arizonan specimen (No. 17645) in our collection was secured near Cave Creek, Maricopa Co., July 19, 1910. Its femoral pores are 16–17. I have seen a specimen secured near Tempe, Maricopa Co., and we caught a young one (No. 33446) March 18, 1912, on the California side of the Colorado river a few miles below Yuma.

16.—Crotaphytus collaris baileyi (Stejneger)

One (No. 34321) was collected May 7, 1912, in the foothills of the Catalina Mountains, near the steam pump eighteen miles north of Tucson. Eight (Nos. 35128 to 35135) were secured August 6–8, 1912, at Cave Creek, Chiricahua Mountains, Cochise County. These lizards are very timid. They seem to come out late in the afternoon, and then appear on the tops of boulders, where they may be seen bobbing up and down as many lizards do. This seems to be distinctively a rock-loving species, while *C. wislizenii* is found on the ground.

The femoral pores in these specimens vary from 14 to 19; being 14 once, 15 twice, 16 five times, 17 five times, 18 four times, and 19 once.

17.—Crotaphytus wislizenii Baird and Girard

Nine of these lizards were collected by us. Two were shot near Yuma, No. 33490, March 19, 1912, and 33686 Sept. 9,

1912. Five were secured at Papago Wells in southeastern Yuma Co., April 16–22, 1912. One (No. 17283) was caught in Paradise Valley, Maricopa Co., May 9, 1910. No. 34320 was found at the steam pump eighteen miles north of Tucson, May 18, 1912. One was seen chasing a *Callisaurus* on the desert.

In eight specimens the femoral pores vary from 19 to 25; being 19 three times, 20 twice, 21 once, 22 four times, 23 three times, 24 twice, and 25 once.

18.—**Uma notata** Baird

Our present collection contains only one *Uma*. This is No. 20812, and was collected near Yuma, June 13, 1910. We failed to find any here in March and in September, 1912, although careful search was made on the same sand hills where Mr. Carlson shot more than forty for us in 1905. These specimens secured by Mr. Carlson were destroyed in the great San Francisco fire of April, 1906. It is probable that there is only one species of *Uma*. We were unable to find this lizard near Tucson.

19.—**Holbrookia maculata approximans** Baird

Twenty-seven Arizonan specimens are at hand, collected at Tucson, April 16—Sept. 3, 1912; Fairbank, August 12, 1912; Cave Creek in the Chiricahua Mountains, Cochise Co., August 6, 1912; and on the desert near the mouths of Ramsey and Carr Canyons, Huachuca Mts., Cochise Co., June 28—July 29, 1912. This *Holbrookia* was found always on the ground out on the open desert, while the other species secured frequents canyons and hillsides, and is usually seen on top of large stones or boulders.

Femoral pores in twenty-five specimens vary from eight to sixteen; being 8 twice, 10 seven times, 11 four times, 12 ten times, 13 fourteen times, 14 seven times, 15 three times, 16 twice.

20.—**Holbrookia texana** (Troschel)

This *Holbrookia* was recorded as Arizonan on the evidence of a single specimen collected by Mr. Price in 1894. We now have at hand forty-five specimens of various ages. Thirty-four were secured in the Catalina Mountains, where they were

found at the steam pump eighteen miles north of Tucson, and in Ventana and Sabino Canyons, April 4—May 2, 1912, and eleven were collected at Cave Creek, Maricopa County, April 4—May 27, 1910.

This lizard is easily distinguished from *H. maculata approximans* by black cross-bars on the lower surface of the tail, and large blue patches on the sides of the belly. Its habit of constantly wanting to get up on the tops of boulders attracts attention to it in life. It is a larger species than *H. m. approximans,* being about equal in size to *Callisaurus ventralis* which it much resembles.

Femoral pores vary from 11 to 18; being 11 once, 12 twice, 13 seven times, 14 eighteen times, 15 twenty-two times; 16 ten times, 17 five times, and 18 three times in thirty-four specimens from the Catalina Mountains.

21.—**Callisaurus ventralis** (Hallowell)

Three hundred and eighty-seven Arizonan specimens of this species are before us. One hundred and thirty of these are from Yuma, Feb. 7–28, 1910, March 11–21, 1912, June 8–24, 1910, and Sept. 9–17, 1912. Sixteen were shot at Papago Wells, Yuma Co., April 16–22, 1912. Two were secured at Growler Well, and four at Ajo in western Pima Co., April 16–22, 1912. One hundred and thirty-one were collected at Cave Creek, Maricopa Co., April 2—May 14, 1910. Three were preserved at Phoenix, March 16–22, 1910; and others were found at Tucson, April 1–13, 1912, at the steam pump in the foothills of the Catalina Mts., 18 miles north of Tucson, May 3–18, 1912; at Ventana Canyon, Catalina Mts., June 14, 1911; at old Fort Lowell, March 29, 1912; and at Agua Caliente, six miles east of Fort Lowell, May 14, 1911.

Femoral pores in forty-one specimens range from 11 to 21; being 11 once, 13 once, 14 four times, 15 fifteen times, 16 thirteen times, 17 twenty-one times, 18 twelve times, 19 four times, 20 five times, 21 twice.

22.—**Uta stansburiana** Baird and Girard

Ninety-eight specimens from Arizona are at hand. They were secured: forty-four at Yuma, March 11–21, 1912, Sept. 10–17, 1912, Dec. 4, 1910; fifteen at Papago Wells, Yuma County, April 16–22, 1912; four at Ajo, western Pima County,

April 16–22, 1912; eight at Tucson, March 28—April 13, 1912; three at the steam pump eighteen miles north of Tucson, May 8–18, 1912; five at old Fort Lowell, March 29—April 4, 1912; one from the Catalina Mts., Pima County; sixteen at Cave Creek, Maricopa County, April 5—May 17, 1910; and two from Dome, Yuma County, Jan. 20 and 21, 1910.

The femoral pores in forty specimens, mostly from Yuma County, vary from twelve to seventeen; being 12 four times, 13 ten times, 14 twenty-six times, 15 twenty-seven times, 16 seven times, 17 once.

All styles of coloration are to be seen in this series. Some have longitudinal light stripes, some have dark dorsal blotches, some are without large markings, but are sprinkled with small blue spots. A living male from Palm Springs, Cal., showed these various types of coloration at different times.

23.—**Uta ornata** Baird and Girard

More than three hundred and sixty specimens of these tree Utas are at hand. After careful comparison of individuals from Yuma and from eastern Arizona we are unable to detect any constant difference nor are we able to distinguish Arizonan examples from the few specimens from Texas which we have for comparison. We, therefore, make use of the name *Uta ornata* for all these lizards, and regard *Uta symmetrica* as a synonym. Our specimens are from the following localities:

Yuma County—Yuma and Papago Wells.

Maricopa County—Cave Creek.

Coconino County—Oak Creek.

Pinal County—Oracle.

Pima County—Tucson, Fort Lowell, and in the Catalina Mountains at the steam pump 18 miles north of Tucson, in Ventana and Sabino Canyons, and in East Sabino Basin.

Santa Cruz County—Mowry in the Patagonia Mountains.

Cochise County—Fairbank, the vicinity of Ramsey Canyon in the Huachuca Mts., and at Cave Creek and Paradise in the Chiricahua Mts.

The femoral pores in forty specimens from Yuma vary from ten to fifteen; being 10 three times, 11 eighteen times, 12 thirty-four times, 13 seventeen times, 14 seven times, and 15

once. The average for the eighty thighs is 11.51. In forty specimens from Pima and Cochise counties the number varies from nine to thirteen; being 9 once, 10 eight times, 11 thirty times, 12 thirty-one times, and 13 ten times. The average for the eighty thighs is 12.12.

In Yuma specimens the color in life in both sexes varies on the upper surfaces from light clay to blackish brown. Most males show the blackish collar and dorsal blotches much more clearly than females. Males have a blue area on each side of the belly, absent in nineteen females. One large male had deep "iron rust" orange covering the entire throat and chin. A smaller male had similar coloring of the throat but with a bright turquoise blue central patch. Five large and two medium-sized males had throats bluish yellow, varying, without respect to size, from nearly clear blue to faintly bluish lemon yellow. One large and one small male had clear lemon yellow throats. One moderately large male had the throat gray without blue or yellow or orange. Nineteen females had no blue on the throat or sides of belly. Eight females had orange-colored, and eight had lemon-colored, throats; while one large and one small female had the throat orange with lemon center.

The coloring of living specimens from Tucson shows a similar variation. Females have no blue on belly. Males have. The blue of the throat varies from clear turquoise to the green-blue of old turquoises. The throat is blue in thirteen males; orange in eight females; clear yellow in three males and six females; orange with yellow center in seven males; orange with blue center in eight males; orange with green center in one male; and plain gray in one female. These color notes were all made in March, 1912.

At Yuma, these lizards are very common on trees and wooden bridges. At Tucson, we found them on trees, fences, and piles of stones.

24.—**Uta graciosa** (Hallowell)

This species still remains rare in collections. We secured only eight specimens, all at Yuma, in Sept. 1911, and March 11–21, 1912. These are Nos. 20722 and 33643 to 33649. Their femoral pores range from nine to twelve; being 9 once,

10 five times, 11 seven times, and 12 once. Some were found lying along the limbs of mesquite trees and some were in low, thick-growing bushes on the sand hills east of Yuma.

25.—**Sceloporus jarrovii** Cope

Our collections include one hundred and forty-three specimens. These were collected in Carr, Ramsey and Miller Canyons in the Huachuca Mts., June 30—July 25, 1912; and in the vicinity of Paradise, Chiricahua Mts., August 4–9, 1912. These lizards are found on rocks in the oak and conifer belts, and range up to eight thousand feet in the Huachucas. They are not so common in the Chiricahuas as in the Huachucas.

The femoral pores in forty specimens vary from thirteen to eighteen; being 13 three times, 14 twenty-three times, 15 twenty-one times, 16 seventeen times, 17 thirteen times, and 18 twice.

The color of *Sceloporus jarrovii* in life is as follows: In an adult male, the collar is blue-black with some brilliant blue extending up from the throat near its anterior edge. The scales of the back and sides of body are outlined with black while the central portion of each scale is light, and in different lights appears white, gray, green, yellow, or irridescent bronze. The head, limbs, and tail are dark brown much relieved with malachite green. A whitish or irridescent bronze line runs back from the eye. Another runs along the upper lip to the ear. A similarly colored longitudinal bar extends forward on each side of the neck from the collar, and a band of the same tint, a scale in width, borders the collar behind except in the middorsal region. The collar is complete across the neck, and has a brownish continuation forward on the middle of the neck to the head. The chin, lower surfaces of the limbs and tail, and the center of the chest and belly are gray. The entire gular region and a stripe along each side of the belly are deep blue, the belly patches shading to malachite green laterally.

Females and young are similarly but less clearly and brightly marked, particularly as regards the light centers of the scales, the intense black collar, and the blue of the inferior surfaces. In young specimens the predominant color is brown; though the characteristic collar shows in even the smallest specimens. The blue throat patch always is single.

26.—**Sceloporus clarkii** Baird and Girard

We have secured eighty specimens of this lizard. Twenty-three of these are from Tucson, where they were shot between March 28 and April 24, 1912. Two (Nos. 20951 and 20952) are from old Fort Lowell. Seventeen were collected in the foothills of the Catalina Mountains, near the steam pump eighteen miles north of Tucson, May 2–18, 1912. One (No. 34685) was taken in the Catalina Mts., at an elevation of 8500 feet on the trail to Mt. Lemon, May, 1912. At Oracle, Pinal Co., two specimens (Nos. 34167, 34168) were caught April 2 and 3, 1912. Mr. Herbert Brown gave us five (Nos. 33819 to 33823) from the Patagonia Mountains, Santa Cruz Co., July 11–21, 1910. Five of these lizards (Nos. 35179 to 35183) were collected at Fairbank, Cochise Co., Aug. 13–18, 1912. From the Huachucas we have twelve specimens (Nos. 34882 to 34893) taken in the lower portions of Ramsey, Carr, and Miller Canyons, July 2–29, 1912. Mr. Slevin collected fourteen in the Chiricahua Mountains, one (No. 35141) from Cave Creek, and thirteen (Nos. 35005 to 35017) from Paradise, August 4–8, 1912.

The femoral pores in thirty-eight specimens vary from eleven to fifteen; being 11 fifteen times, 12 thirty-three times, 13 seventeen times, 14 nine times, and 15 twice. The average of the seventy-eight thighs is 12.34.

At Oracle these lizards were found in cracks in the granite boulders. The one from Mt. Lemon was also taken on a boulder. Nearly all the others were found on trees—at Tucson on willows along the Santa Cruz River, in the foothills of the Catalinas on mesquites, in the Huachucas and Chiricahuas on oaks and pines. Those taken at Fairbank were under the eaves of an old adobe barn. They sometimes climb trees to a height of thirty or forty feet.

27.—**Sceloporus magister** Hallowell

Nineteen Arizonan specimens are in the collection. Nos. 33488 and 33489 were found in an old adobe house at Yuma, March 11–16, 1912. In Maricopa County this species was collected (No. 17286) at Paradise Valley, and (Nos. 17287 to 17289 and 20718) at Cave Creek, May 14–19, 1910. Two (Nos. 34054 and 34057) were secured near Tucson, April 1–

16, 1912. Ten were taken near the steam pump in the foothills of the Catalina Mts., eighteen miles north of Tucson, April 28—May 18, 1912.

Femoral pores in seventeen specimens vary from eleven to fifteen; being 11 eight times, 12 thirteen times, 13 nine times, and 14 four times. The average in the thirty-four thighs is 12.23.

At Tucson this species was found on willow trees in the river-bed, while at the steam pump they frequented the wooden fences about the corral.

28.—**Sceloporus consobrinus** Baird and Girard

Thirty-one (Nos. 35037 to 35067) were secured near Paradise in the Chiricahua Mts., August 4–10, 1912. This lizard was found also in a wash on the desert near the mouth of Ramsey Canyon, Huachuca Mts., July 2, 1912. Four (Nos. 34686 to 34689) were collected at 8500 feet on Mt. Lemon, Santa Catalina Mts., June 4–17, 1912. Nineteen were caught in the river-bed at Tucson, March 24 to April 5, 1912. This species was taken also at Oak Creek, Coconino Co., Sept. 1–4, 1912.

The femoral pores in thirty-one specimens vary from twelve to nineteen; being 12 four times, 13 seven times, 14 nine times, 15 thirteen times, 16 twelve times, 17 nine times, 18 five times, and 19 three times. The average of the sixty-two thighs is 15.35.

30.—**Phrynosoma hernandesi** (Girard)

We have forty-two specimens of this horned toad. Thirty-one of these (Nos. 34691 to 34721) are from the top of Mt. Lemon in the Catalina Mountains, where they were collected June 4–17, 1912. Mr. Herbert Brown gave us six (Nos. 33827 to 33832) from Manning Camp, Rincon Mountains, August 17–22, 1911, and states that they are extremely common in this locality. Nos. 35001 and 35004 were collected in the pine belt in Carr Canyon, Huachuca Mts., July 10–27, 1912. Nos. 35098 and 35099 were found in the pine belt at Paradise in the Chiricahua Mts., Cochise Co., Aug. 4–10, 1912. No. 35292 was caught at Ash Fork, Yavapai Co., Aug. 30, 1912.

One of the specimens from Mt. Lemon has the occipital horns as Dr. Stejneger describes them to be in *P. ornatissimum.*

We therefore regard this name and *P. hernandesi* as synonyms. In southern Arizona this lizard seems to be confined to the higher levels of the mountains. A large female taken in the Huachucas in July contains a number of young, showing that this species is ovoviviparous.

Femoral pores in twenty specimens vary from eleven to nineteen; being 11 once, 12 six times, 13 three times, 14 eleven times, 15 eight times, 16 four times, 17 three times, 18 once, 19 once.

31.—**Phrynosoma solare** Gray

Twenty-three specimens are at hand. No. 35185 was collected at Fairbank, Cochise Co., August 12, 1912. No. 20933, was caught at Fort Lowell. Four were secured at Tucson May 30—Aug. 23, 1912, and one June 29, 1911. No. 34322 was found at the steam pump in the foothills of the Catalina Mountains, eighteen miles north of Tucson, July 9, 1912. The other fifteen are from Phoenix, where they were collected March 15—June 6, 1910.

Femoral pores in twenty specimens vary from fourteen to twenty-six; being 14 once, 15 once, 17 twice, 18 four times, 19 three times, 20 eight times, 21 eight times, 22 six times, 23 five times, 24 once, 26 once. Unlike the preceding, this horned toad is a desert species.

34.—**Phrynosoma platyrhinos** Girard

Two specimens (Nos. 34210, 34211) were caught at Papago Wells, in the southeastern part of Yuma County, April 16–22, 1912. Femoral pores are 7–6 and 9–7.

35.—**Phrynosoma m'callii** (Hallowell)

Three specimens (Nos. 33486, 33487 and 33657) were collected at Yuma, March 14 and 15, and Sept. 12, 1912. All were secured on the sand hills east of town. One was found sitting on an ant hill, but not an ant was in sight although a half hour later they were swarming over it. It seemed as though the ants remained under cover in the nest as long as the lizard was watching for them. Femoral pores are 18–19, 21–23, and 18–18.

36.—**Heloderma suspectum** Cope

Our collections include twenty Gila Monsters. No. 35301, was caught in a wash on the grounds of the Desert Laboratory,

Tucson, at about five in the afternoon, August 23, 1912. No. 34061, was secured thirty miles west of Tucson, April 25, 1912. No. 34198, was taken in Ventana Canyon, Catalina Mountains, April 28, 1912. Eleven (Nos. 34283 to 34293) were collected near the steam pump in the foothills of the Catalina Mountains, eighteen miles north of Tucson, May, 1912. No. 35000 was caught in Ramsey Canyon, Huachuca Mts., July 27, 1912. Three (Nos. 17642 to 17644) were found at Cave Creek, Maricopa County, May, 1910. No. 17641 is from Paradise Valley, Maricopa Co., May 1910. No. 13169 is labeled merely Arizona.

Helodermas were found out at any time of day. They were found in the giant cactus, creosote bush, and oak belts. All found were merely walking about. They hasten their gait when one approaches them, but were never seen to run. Two put in a pillow case and hung in a tree, scratched a hole through the cloth and escaped. The species still is common in favorable locations.

37.—**Gerrhonotus kingii** Gray

We have five specimens of this handsome lizard (Nos. 34962 to 34966) secured in Ramsey and Carr Canyon in the Huachuca Mountains, Cochise County, July 3 to 29, 1912. They were found in the oak belt, on the ground among stones and dead leaves, walking about in the day time, and were very shy. All five have fourteen longitudinal rows of dorsal scales, of which three rows on each side of the middorsal line are weakly keeled except in No. 34963, which has four keeled rows on each side. The dorsal scales in a row from the interoccipital plate to the backs of the thighs are 45, 48, 50, 51, 52. On the belly one counts in a row from the mental plate to the anus 55, 58, 53, 59 and 60. Three have ten dark cross-bands on the body, while one has nine and one eleven. The dark bands on the tail vary in number from fourteen to nineteen.

38.—**Cnemidophorus gularis** Baird and Girard

We have secured one hundred and eighty-six of these lizards. These are: thirty-three from the vicinity of Paradise and Cave Creek, Chiricahua Mts., August 4–10, 1912; sixty-eight from the lower parts of Ramsey, Miller, and Carr Canyons in the Huachuca Mts., July 2–30, 1912; fifteen from Fairbanks,

Aug. 12–18, 1912; one from an altitude of 8500 feet on Mt. Lemon in the Catalina Mts., June 4 to 17, 1912; forty-six from the steam pump in the foothills of the Catalina Mts., eighteen miles north of Tucson, May 2–18, 1912; nineteen from Tucson, March 31—June 23, 1912; three from Fort Lowell near Tucson; and one (No. 35286) from Oak Creek, Coconino Co., Sept. 4, 1912.

The femoral pores in forty specimens vary from fifteen to twenty; being 15 once, 16 eight times, 17 twenty-one times, 18 thirty-four times, 19 thirteen times, and 20 three times. The average of the eighty thighs is 17.7.

Our series from Tucson and the steam pump include a number of very large individuals with the coloration typical of the form which has been called *C. scalaris.* As we have also specimens intermediate in size and coloration, it would appear that *C. scalaris* is based upon very old individuals of *C. gularis.*

Some young specimens from Fairbank show a distinct median dorsal light line. While none of these specimens has the nasal in contact with the second labial, this relation is found on one side of the head in a specimen with the coloration usually seen in young *C. gularis.* It may possibly be, therefore, that *C. arizonae* is based upon an abnormal individual of *C. gularis,* which differed from the usual type in coloration, in the relations of the nasal and second labial plates, in the number of femoral pores, and in the size of the postantebrachial plates.

40.—**Cnemidophorus melanostethus** (Cope)

Our collections include one hundred and fifty-nine specimens of this lizard. Of these, two were secured at Fairbank, Cochise Co., August 12–14, 1912; one from Pima Canyon, Catalina Mts., June 7, 1908; seventy-six from near the steam pump in the foothills of the Catalina Mts., eighteen miles north of Tucson, May 2–18, 1912; six from Tucson, April 24—June 23, 1912; three from Fort Lowell near Tucson; one from Gunsight, western Pima Co., April 16–22, 1912; and seventy from Cave Creek, Maricopa Co., April 1—August 13, 1910.

The specimen (No. 35340) from Gunsight is a typical one with black throat and chest.

Femoral pores in forty specimens vary from seventeen to twenty-four; being 17 six times, 18 eight times, 19 eighteen

times, 20 twenty-two times, 21 thirteen times, 22 eleven times, 23 once, and 24 once. The average number is 19.87.

41.—**Cnemidophorus tigris** Baird and Girard

Seventy-three Arizonan specimens of this lizard are at hand. Fifty-three of these were collected at Yuma in March, June, September, October, and December. Nineteen were shot at Papago Wells, southeastern Yuma Co., April 16–22, 1912. One (No. 35328) was secured at Ajo, Pima County, April 16–22, 1912. None of these specimens have black throats and chests, although these regions may be slaty with a few black spots. The specimen from Ajo is as typical as the others, although this locality must be near the eastern limit of the range of this form, for typical *C. melanostethus* was collected at Gunsight, Pima Co., only about forty miles southeast.

Femoral pores in forty of these specimens vary from seventeen to twenty-five; being 17 three times, 18 four times, 19 ten times, 20 fourteen times, 21 eighteen times, 22 eleven times, 23 nine times, 24 four times, 25 twice, and 5 injured. The average number is 20.89, as against 20.4 in forty specimens from Yuma recorded in a former paper.

43.—**Leptotyphlops dulcis** (Baird and Girard)

We did not collect any specimens of this worm snake. So far as we can learn it has not been recorded from Arizona; but its occurrence there was shown by a typical specimen which Mr. Herbert Brown collected at Yuma and sent to me a short time before the great San Francisco fire of April, 1906, in which the specimen unfortunately was destroyed. Professor Brown of the University of Arizona told us that he had seen both kinds of worm snakes at Tucson, this species being represented by a single specimen collected on the grounds of the Carnegie Desert Laboratory in 1911.

44.—**Siagonodon humilis** (Baird and Girard)

We have at hand four specimens from Arizona. Three are from Tucson. Nos. 33835 and 33836, collected April 17, 1895, and No. 35325 without date were presented to us by Professor Brown of the University of Arizona. The fourth specimen, No. 33849, was collected about the middle of May, 1912, in the foothills of the Catalina Mts., about eighteen miles northeast of

Tucson by Mr. Herbert Brown. It was found under a stone about a foot square, and about twenty feet from the edge of a pool of water. Under the stone the earth had been worked from between the grass roots, showing several runways in one of which this snake was coiled up.

The largest specimen we have seen is in the University of Arizona, and measures 384mm., of which 16mm. represent the tail. It was secured by Mr. Herbert Brown at Yuma.

45.—**Lichanura roseofusca** Cope

Cope has recorded this boa from the Harqua Halla Mountains. Mr. W. E. Bancroft writes us that he has seen this snake only in these mountains and in the Harcouvar Range in northern Yuma County. He very kindly sent us a beautiful specimen from Aguila, Maricopa County. This is now No. 35348, and has scales in 36–41–41–33 rows, gastrosteges 230, urosteges 47, anal entire, supralabials 14–15, infralabials 15–15, loreals about 4.

46.—**Chilomeniscus cinctus** Cope

The collection contains five specimens of this snake. Two of these (Nos. 33839 and 33840) were presented by Professor Brown of the University of Arizona, and are labeled merely Arizona.

No. 33834, Cabali Mts., Pima County, given to us by Mr. Herbert Brown, was collected Nov. 2, 1910. No. 34172 was collected in Ventana Canyon, Catalina Mts., May, 1912. No. 17551, Cave Creek, Maricopa County, April 23, 1910, was collected by John I. Carlson. A mutilated specimen was found by us near Fort Yuma, California.

No. 17551 has scales in 13 rows, gastrosteges 113, anal divided, urosteges 29, supralabials 7–7, infralabials 8–8, preoculars 1–1, postoculars 2–2, loreals 0–0, temporals 1+1, posterior genials shorter, black bands 18 on body and four on tail.

No. 33834 has scale rows 13, gastrosteges 113, anal divided, urosteges 22, supralabials 7–7, infralabials 8–8, preoculars 1–1, postoculars 2–2, loreals 0–0, temporals 1+1, posterior genials shorter, black bands 18 on body and 3 on tail.

No. 33839 has scale rows 13, gastrosteges 115, anal divided, urosteges 28, supralabials 7–7, infralabials 7–7, preoculars 1–1,

postoculars 2–2, loreal 0–0, temporals 1+1, posterior genials shorter, black bands 19 on body and 4 on tail.

No. 33840 has scale rows 13, gastrosteges 121, anal divided, urosteges 23, supralabials 7–7, infralabials 7–7, preoculars 1–1, postoculars, 2–2, loreals 0–0, temporals 1+1, posterior genials shorter, black bands 21 on body and 4 on tail.

No. 34172 has scale rows 13, gastrosteges 122, anal divided, urosteges 25; supralabials 7–7, infralabials 7–6, preoculars 1–1, postoculars 2–2, loreals 1–1, temporals 1+1, posterior genials shorter, black bands 20 on body and 4 on tail.

In life the dorsal portions of the white rings are suffused with reddish orange.

The black bands are not so widely separated as in *Sonora occipitalis*. No. 34172 has a well developed loreal on each side of the head, but in other respects is quite typical.

In No. 17551, the prefrontal reaches the labials on one side of the head but not on the other, where the postnasal and preocular are in contact.

No. 33834 has the prefrontals separated from the labials by the meeting of the postnasal and preoculars. No. 34172 has them separated by the intervening loreals. The other two specimens have the prefrontals and labials in contact.

We, therefore, cannot recognize Cope's *Chilomeniscus ephippicus* as distinct from his *C. cinctus*.

47.—**Sonora semiannulata** Baird and Girard

There can be be no doubt that the snake described under this name by Baird and Girard is the same species as Cope's *Contia* or *Chionactis isozonus*. This being true, both the generic and specific names of Baird & Girard must replace those later suggested by Cope. Hallowell's *Lamprosoma* seems not to be generically distinct, although the species *occipitale* is so. We thus have in Arizona three species of *Sonora* as follows:

Sonora semiannulata=*Chionactis isozonus*
Sonora episcopa =*Chionactis episcopa*
Sonora occipitalis =*Chionactis occipitalis*

We have seen no evidence of intergradation of these forms, and therefore regard them all as species, although Cope states that intermediate types of coloration connect the first two forms.

We have at hand only one specimen of *Sonora semiannulata,* No. 17550, collected at Cave Creek, Maricopa Co., April 20, 1910. It agrees in all essential particulars with the description and plate given by Baird and Girard, and with the description by Cope, except in the number of its black dorsal cross-bands, which are forty on the body and ten on the tail. This is about twice as many as in the specimens recorded by these authors.

This specimen has 15 scale rows, gastrosteges 168, anal divided, urosteges 45, superlabials 7–7, infralabials, 7–7, preoculars 1–1, postoculars 2–2, loreal 1–1, temporals 1+2, posterior genials much shorter. The black bars each occupy about the length of two or three scales, and are separated by slightly greater light intervals. These intervals are yellowish white laterally with dark spots at the bases of the scales, while the central dorsal portions are pinkish anteriorly, becoming reddish orange toward and on the tail. The length to anus is 230mm., of the tail 56mm.

48.—**Sonora episcopa** (Kennicott)

Our collection contains no specimens of this pretty little snake. Mr. Herbert Brown showed me one in the collection of the University of Arizona. This specimen was collected at Yuma, and has scales in fourteen rows, gastrosteges 173, urosteges 47, loreal 1–1, and the typical coloration.

I have described elsewhere (Proc. Cal. Acad. Sci., (4), III, 1912, p. 153) two specimens from Yuma, which are in the collection of Stanford University. These had scales in 15 rows, gastrosteges 169, 168, anal divided, and urosteges 45, 47.

49.—**Sonora occipitalis** (Hallowell)

A fine specimen (No. 33451) was dug out of the sand at the base of a bush on a dune two or three miles east of Yuma, March 19, 1912. It was about a foot below the surface.

In life, the dark rings were pure black, and between each pair of black rings was a transverse bar or half ring of cadmium orange, of about the same width on the midline as the black rings, and separated from them by a nearly equal space, which was pale lemon yellow. This lemon tint extended down on to the sides, and the lower surfaces were a paler lemon.

This specimen has 15 scale rows, gastrosteges 164, anal divided, urosteges 51, supralabials 7–7, infralabials 7–7, pre-

oculars 1–1, postoculars 2–2, loreals 1–1, temporals 1+2, posterior genials very small, black bars 21 on body and 8 on tail.

A second specimen (No. 33809) from Yuma, presented by Mr. Herbert Brown, has scale rows 15, gastrosteges 167, anal divided, urosteges 22+, supralabials 7–7, infralabials 8–8, preoculars 1–1, postoculars 2–2, loreals 1–1, temporals 1+2, posterior genials very small, black bars 22 on body.

51.—**Rhinocheilus lecontei** Baird and Girard

No. 35295, Desert Laboratory, Tucson, June 20, 1912.—Scale rows 23, gastrosteges 197, anal entire, urosteges 51 last six divided, supralabials 8–8, infralabials 8–8, preoculars 2–2, postoculars 2–2, loreal 1–1, temporals 2+3, posterior genials shorter, 25 dark blotches on body and tail.

No. 33843, Arizona.—Scale rows 23, gastrosteges 193, anal entire, urosteges 50 of which 10 are divided, supralabials 8–8, infralabials 9–9, preoculars 1–1, postoculars 2–2, loreal 1–1, temporals 2+3, posterior genials shorter.

No. 33842, Arizona.—Scale rows 23, gastrosteges 186, anal entire, urosteges 47 of which 12 are divided, superlabials 8–8, infralabials 9–10, preoculars 1–1, loreal 1–1, temporals 2+3.

No. 33844, Arizona.—Scale rows 23, preoculars 1–1, postoculars 2–2, supralabials 8–8.

No. 33838, Tucson, July 22, 1892.—Supralabials 7–8, preoculars 1–1, postoculars 2–2, loreal 1–1, temporals 2+3.

53.—**Salvadora grahamiae** Baird and Girard

The present collection includes six specimens of this snake. The scale counts are as follows:

No. 33453, Yuma, March 14, 1912.—Scale rows 17, gastrosteges 211, anal divided, urosteges 67, supralabials 9–10, infralabials 10–10, preoculars 2–2, postoculars 2–2, loreals 1–1, temporals 2+3, genials equal. This specimen was caught late in the afternoon, as it was traveling along under some bushes on the desert.

No. 33810, Yuma, Herbert Brown.—Scale rows 17, gastrosteges 209, anal divided, urosteges 98, supralabials 9–10, infralabials 9–9, preoculars 1–1, postoculars 3–3, loreal 2–2, temporals 2+2, genials equal.

No. 35296, Tucson, June 20, 1912.—Scale rows 17, gas-

trosteges 195, anal divided, urosteges 73, supralabials 9–9, preoculars 2–2, postoculars 2–2, temporals 2+2–2+3.

No. 33875, Desert Laboratory, Tucson.—Scale rows 17, gastrosteges 202, anal divided, urosteges 80, supralabials 9–9, infralabials 10–10, preoculars 2–2, postoculars 2–2, loreals 1–1, temporals 2+2, posterior genials longer.

No. 34275, steam pump, eighteen miles north of Tucson, May 7, 1912.—Scale rows 17, gastrosteges 200, anal divided, urosteges 80, supralabials 9–9, infralabials 11–12, preoculars 1–1, postoculars 2–2, loreals 1–1, temporals 2+2–2+3, posterior genials longer.

No. 34754, Ramsey Canyon, Huachuca Mts., July 10, 1912.—Scale rows 17, gastrosteges 178, anal divided, urosteges 99, supralabials 8–8, infralabials 10–10, preoculars 2–2, postoculars 2–2, loreals 1–1, temporals 2+2, posterior genials shorter. This specimen was found lying on the ground in a small orchard toward evening.

Mr. Herbert Brown showed us specimens from Pima Canyon, Santa Catalina Mts., Pima Co., and from Mowry, Patagonia Mts., Santa Cruz County.

55.—**Hypsiglena ochrorhynchus** Cope

We have secured only four Arizonan specimens of this snake. These are as follows:

No. 17548, Cave Creek, Maricopa Co., April 6, 1910, John Carlson.—Scale rows 21, gastrosteges 185, anal divided, urosteges 50, supralabials 8–8, infralabials 9–9, preoculars 2–2, postoculars 2–2, loreals 1–1, temporals 1+2, posterior genials longer.

No. 33874, vic. Desert Laboratory, Tucson, March 23, 1912.—Scale rows 21, gastrosteges 175, anal divided, urosteges 57, supralabials 8–8, infralabials 9–9, preoculars 1–1, postoculars 3–3, loreals 1–1, temporals 1+2, posterior genials shorter. This snake was found under a stone.

No. 34276, steam pump, eighteen miles north of Tucson, May 3, 1912.—Scale rows 21, gastrosteges 176, anal divided, urosteges 39+, supralabials 8–8, infralabials 10–10, preoculars 2–2, postoculars 2–2, loreals 1–1, temporals 1+1–1+2. This specimen was found under a tin can in a chicken yard.

No. 35339, Gunsight, western Pima County, April 16–22, 1912.—Scale rows 21, gastrosteges 178, anal divided, urosteges

58, supralabials 8–8, infralabials 10–10, preoculars 1–1, postoculars 2–3, loreals 1–1, temporals 1+2, posterior genials longer. Caught under a stone on the desert.

56.—**Diadophis regalis** Baird and Girard

A single specimen, No. 34756, was caught in a peach orchard near the pine and oak belts in Ramsey Canyon, Huachuca Mts., July 29, 1912. This snake was found just before dusk as it was entering a hole by the side of a fence post. When opened this *Diadophis* was found to contain a fine large *Tantilla wilcoxi* which it must have just eaten.

Scales are in 17 rows, gastrosteges 212, anal divided, urosteges 72, supralabials 7–7, infralabials 8–8, preoculars 2–2, postoculars 2–2, temporals 1+2, loreal 1–1, posterior genials shorter.

57.—**Lampropeltis pyrrhomelaena** Cope

Three specimens were secured. No. 34684, from an altitude of 7000 ft. in the pine belt in Bear Canyon, on Mt. Lemon, Catalina Mts., Pima County, has scales in 23 rows, anal entire, urosteges 79, body and tail with 61 yellow rings.

No. 34753, from the pine region in Ramsey Canyon, Huachuca Mts., July 11, 1912, has scales in 23 rows, anal entire, gastrosteges 227, urosteges 78, supralabials 7–7, infralabials 10–11, preoculars 1–1, postoculars 2–2, temporals 2+3, loreal 1–1, posterior genials shorter, body and tail with 48 yellow rings, snout yellow.

No. 35326, from pine woods in Oak Creek Canyon, Coconino County, Sept. 4, 1912, has scales in 23 rows, anal entire, gastrosteges 217, urosteges 70, supralabials 7–8, infralabials 10–10, preoculars 1–1, postoculars 2–3, temporals 2+3, loreal 1–1, posterior genials shorter, body and tail with 60 yellow rings, snout yellow.

60.—**Lampropeltis boylii** Baird and Girard

A milk snake, No. 17542, collected at Cave Creek, Maricopa County, has white rings without black edging on the scales. It has scales in 25 rows, gastrosteges 226, anal entire, urosteges 48, supralabials 7–7, infralabials 9–9, preoculars 1–1, postoculars 2–2, temporals 2+4, loreal 1–1, posterior genials shorter, thirty-five white rings on body and tail.

61.—**Bascanion flagellum frenatum** Stejneger

The collection includes specimens from Yuma, from Papago Wells close to the southeastern corner of Yuma County, and from Cave Creek, Maricopa County.

No. 34203, Papago Wells, has scale rows 17, gastrosteges 192, anal divided, urosteges 110, supralabials 8–8, infralabials 10–11, preoculars 2–2, postoculars 2–2, temporals 2+2+2, loreal 1–1, posterior genials longer.

No. 17549, Cave Creek, has scale rows 17, gastrosteges 191, anal divided, urosteges 102, supralabials 8–8, infralabials 10–10, preoculars 1–2, postoculars 2–2, temporals 2+2+2, loreal 1–1, posterior genials longer.

No. 30672, Yuma, Oct. 22, 1911, has scale rows 17, gastrosteges 199, anal divided, urosteges 105, supralabials 8–8, infralabials 10–10, preoculars 1–1, postoculars 2–2, temporals 2+2+2, loreal 1–1, posterior genials longer.

No. 30673, Yuma, Oct. 22, 1911, has scale rows 17, gastrosteges 194, anal divided, urosteges 35+, supralabials 8–8, infralabials 10–10, preoculars 1–1, postoculars 2–2, temporals 2+2+2, loreal 1–1, posterior genials longer.

62.—**Bascanion piceum** Cope

Two specimens were captured in the bed of the Santa Cruz River near Tucson, May 29, 1912, and one was seen near the steam pump eighteen miles north of Tucson, and a fourth specimen was found dead in the central part of Pima county.

The specimens caught May 29, 1912, were apparently mating. They were lying on the sand at full length but entwined. When disturbed they immediately separated and instantly mounted to the top of a willow tree some twenty feet high, where they were captured with much difficulty. Both were jet black with the lower surfaces a beautiful coral pink. The fact that these two black snakes were mating is very interesting, since it would seem to indicate that they may really represent a distinct species rather than a melanistic phase of *Bascanion flagellum frenatum.*

In addition to the above localities these black racers have been taken at Fort Lowell and at Camp Grant, Arizona, and near Ensenada, Lower California.

No. 33871, a female, has scales in 17 rows, gastrosteges 195, and divided, urosteges 102, supralabials 7–8, infralabials 9–10, preoculars 2–2, postoculars 2–2, temporals 2+2+2, loreal 1–1, posterior genials longer.

No. 33872, a male, has scales in 17 rows, gastrosteges 200, anal divided, urosteges 112, supralabials 8–8, infralabials 10–11, preoculars 2–2, postoculars 2–2, temporals 2+2+2, loreal 1–1, genials equal.

63.—**Bascanion semilineatum** Cope

Several specimens of this snake were captured in the Huachuca Mountains. They were found in the oak region near the lower ends of Miller, Ramsey, and Carr Canyons, July 10–30, 1912. One was found under a stone, one on a wall of rock, and the others on fairly open ground. The lower surfaces were straw-yellow. All have scales in seventeen rows, anal divided, loreal 1–1, postoculars 2–2, supralabials 8–8. The other counts are in order for Nos. 34749, 34750, 34751, 34752; gastrosteges 200, 200, 196, 200, urosteges 129, 138, ——, 132, infralabials 9–9, 9–9, 9–10, 10–10, preoculars 1–1, 1–1, 1–1, 2-2, temporals 2+2, 1+2+3, 2+2+3, 2+2+2—2+3+3.

Mr. Herbert Brown showed us a specimen collected at Harshaw, Patagonia Mts., Santa Cruz County, July 20, 1910.

64.—**Bascanion taeniatum** (Hallowell)

One typical specimen of this racer was collected at Oak Creek, Coconino County, September 2, 1912. It was found in the brush on the side of the canyon. It is No. 35235, and has scales in 15 rows, gastrosteges 198, anal divided, urosteges 125, supralabials 8–8 infralabials 9–9, preoculars 2–2, postoculars 2–2, temporals 2+2+2, loreal 1–1, posterior genials longer.

65.—**Arizona elegans** Kennicott

The only snake of this kind obtained, No. 33452, was dug out of a hole in a sand hill east of Yuma, March 19, 1912. It has scales in 27 rows, gastrosteges 209, anal entire, urosteges 49, supralabials 9–8, infralabials 13–12, preoculars 1–1, postoculars 2–2, temporals 2+3, posterior genials divided.

In life the lower surfaces and two to three rows of lateral

along mid back are lighter yellowish with whitish edges and with reddish or reddish brown marking near the base of each scale. The dark markings are in part blackish brown, in part deep olive. The head is light olive with darker olive markings.

This specimen contained a *Dipsosaurus* which it had eaten.

66.—**Pituophis catenifer deserticola** Stejneger

A large specimen, No. 33447, was found under some boards near Yuma, March 17, 1912. Two, Nos. 33869, 33870, were caught near the Santa Cruz River at Tucson, April 9, 1912; one, No. 34755, in Carr Canyon, Huachuca Mts., July 20, 1912, and three specimens, Nos. 17541, 17546, 17547, were secured at Cave Creek.

No. 33447, from Yuma, has scale rows 33, gastrosteges 258, anal single, urosteges 59, supralabials 8–8, infralabials 12–12, preoculars 1–1, postoculars 4–5, temporals 3+3 loreal 1–1, posterior genials shorter. This snake contained a small rodent.

No. 33869, from Tucson, has scale rows 33, gastrosteges 237, anal single, urosteges 59, supralabials 9–10, infralabials 12–12, preoculars 1–1, postoculars 3–4, temporals 2+3, loreal 1–1, posterior genials shorter.

No. 33870, from Tucson, has scale rows 31, gastrosteges 226, anal single, urosteges 64, supralabials 8–8, infralabials 13–13, preoculars 1–1, postoculars 3–3, temporals 3+3, loreal 1–1, posterior genials shorter.

No. 34755, from Huachuca Mts., has scale rows 33, gastrosteges 233, anal divided, urosteges 57, supralabials 8–8, infralabials 13–14, preoculars 1–1, postoculars 3–4, temporals 4+4, loreal 1–1, posterior genials shorter.

No. 17541, from Cave Creek, has scale rows 31, gastrosteges 237, anal single, urosteges 64, supralabials 9–9, infralabials 14–14, preoculars 2–2, postoculars 4–4, temporals 3–3, loreal 1–1, posterior genials shorter.

No. 17546, from Cave Creek, has scale rows 35, gastrosteges 245, anal single, urosteges 60, supralabials 9–9, preoculars 1–1, postoculars 3–3, loreal 1–1, posterior genials shorter.

No. 17547, from Cave Creek, has scale rows 31, gastrosteges 235, anal single, urosteges 57, supralabials 8–8, infralabials 12–12, preoculars 1–1, postoculars 3–3, temporals 4+4, loreal 1–1, posterior genials shorter.

67.—**Thamnophis vagrans** (Baird and Girard)

Our collection includes only one Arizonan specimen of this snake. It (No. 35266) was caught Sept. 1–3, 1912, on Oak Creek, Coconino County, with numerous specimens of *Thamnophis eques* and *T. angustirostris*. All three species were found in the water or on the rocks in the stream.

No. 35266 has 21–19–17 scale rows, gastrosteges 148, anal entire, urosteges 76, supralabials 8–8, infralabials 10–10, preoculars 1–1, postoculars 3–3, loreals 1–1, temporals 1+2, posterior genials slightly shorter. The dorsal line is rather indistinct except anteriorly, but it can be seen that the upper spots encroach upon it. The lateral lines are upon the second and third rows of scales. There are no definite dark nuchal blotches or light postoral crescents. The gastrosteges show only a little dark brown or black along their anterior edges.

This species has been recorded from Fort Verde, Fort Whipple, San Francisco Mountain, Mineral Spring and Prescott, Arizona.

68.—**Thamnophis eques** (Reuss)

We have at hand twenty-one specimens of this snake. Three (Nos. 17543, 17544, and 17545) are from Cave Creek, Maricopa County, May 9, 1910. Ten (Nos. 35256 to 35265) were secured at Oak Creek, Coconino County, Sept. 1–3, 1912. Two (34169 and 34170) were shot in Sabino Canyon, Santa Catalina Mountains, April 4, 1912. The other six (34277 to 34282) were collected in the foothills of the Catalina Mountains near the steam pump eighteen miles north of Tucson, May 10–18, 1912.

All of these specimens show the normal coloration with lateral lines on the second and third rows of scales, prominent dark nuchal blotches and no light postoral crescents. Variation in scale characters is given in the following table:

No.	Scale rows	Gastrosteges	Urosteges	Supralabials	Infralabials	Preoculars	Postoculars	Loreal	Temporals
17543	19—17	164	82	8—8	10—10	1—1	3—3	1—1	1+2
17544	19—17	172	47+	8—8	10—10	1—1	3—3	1—1	1+2
17545	19—17	172	93	8—9	11—11	1—1	3—3	1—1	1+3
34169	19—17	167	77	8—8	10—10	1—1	3—4	1—1	1+2
34170	19—17	167	85	8—8	10—10	1—2	3—3	1—1	1+3
34277	19—17	167	97	8—8	10—10	1—1	3—3	1—1	1+2—1+3
34278	19—17	174	93	8—8	10—10	1—1	3—3	1—1	1+2
34279	19—17	171	80	8—8	10—10	1—1	3—3	1—1	2+3
34280	19—17	173	87	8—8	10—10	1—1	3—3	1—1	1+2
34281	19—17	166	55+	8—9	10—10	1—1	3—3	1—1	1+3
34282	19—17	166	48+	8—8	10—10	1—1	3—3	1—1	1+2
35256	19—17		92	8—8	10—10	1—1	3—3	1—1	1+2—1+3
35257	19—17	170	90	8—8	10—10	1—1	3—3	1—1	1+2
35258	21—19—17	166	88	8—8	10—10	1—1	3—3	1—1	1+2
35259	19—17	173	96	8—8	10—10	1—1	2—2	1—1	1+2
35260	19—17	175	92	8—8	9—10	1—1	3—4	1—1	1+2
35261	19—17	168	88	8—8	10—11	1—1	3—3	1—1	1+2
35262	19—17	170	88	8—8	10—10	1—1	3—4	1—1	1+2
35263	19—17	172	97	8—8	10—10	1—1	3—3	1—1	1+2
35264	19—17	171	91	8—8	10—10	1—1	3—3	1—1	1+2
35265	19—17	170	86	8—8	11—11	1—1	3—3	1—1	1+2—1+3

69.—**Thamnophis marcianus** (Baird and Girard)

Four specimens of this species are in the collection. Nos. 35298, 35299, and 35300 are from Tucson Aug. 22–23, 1912, while No. 35159 was caught at Fairbank, Cochise County, August 16–17, 1912. These specimens agree in coloration, having postoral crests, dark nuchal blotches, lateral line on third row of scales or indefinite, large dorsal spots, and gastrosteges marked with black laterally.

No. 35298, has scale rows 21–19–17, gastrosteges 149, anal entire, urosteges 64, supralabials 8–8, infralabials 10–10, preoculars 1–1, postoculars 3–4, loreal 1–1, temporal 1+3–2+3, posterior genials longer.

No. 35299, has scale rows 21–19–17, gastrosteges 162, anal entire, urosteges 65, supralabials 8–8, infralabials 10–11, preoculars 1–1, postoculars 3–4, loreal 1–1, temporals 1+2+3, posterior genials longer.

No. 35300, has scale rows 21–19–17, gastrosteges 156, anal entire, urosteges 65, supralabials 8–8, infralabials 10–11, preoculars 1–1, postoculars 4–4, loreal 1–1, temporals 1+3+ 3–1+3+3, posterior genials longer.

No. 35159, has scale rows 21–19–17, gastrosteges 157, anal entire, urosteges 67, supralabials 8–8, infralabials 10–11, preoculars 1–1, postoculars 3–3, loreal 1–1, temporals 1+3, posterior genials longer.

These snakes were caught in mud puddles on the desert a mile or more from the river.

Mr. Herbert Brown sent us a number from Yuma, but they were destroyed in the San Francisco fire of April, 1906.

70.—**Thamnophis megalops** (Kennicott)

We have six specimens of this garter snake. Nos. 35158, 35160, 35161, were collected at Fairbank, Cochise County, August 15–17, 1912. Nos. 33876, 33877, and 33878, were caught at Tucson, March 20–April 13, 1912. These specimens all have loreals 1–1, preoculars 1–1, anal entire, posterior genials longer. No distinct postoral light crescents, no very definite dark blotches on nape, lateral lines on the third and fourth rows of scales. Variation is shown in the following table:

No.	Scale rows	Gastrosteges	Urosteges	Supralabials	Infralabials	Postoculars	Temporals
33876	21—19—17	162	75	8—8	10—10	3—4	1+3
33877	21—19—17	154	38+	8—9	10—10	3—4	1+2—1+3
33878	21—19—17	157	74	8—8	10—10	3—3	1+3
35158	21—23—21—19	159	77	8—8	10—10	3—4	1+2+3
35160	21—19—17	161		8—8	10—10	3—3	1+2+3
35161	21—19—17	162	72	8—9	10—10	4—4	1+2+3

The specimens secured at Tucson were caught close to the Santa Cruz River. No. 33876 was caught at about 4 p. m. in a pool near a ditch. It was swimming several inches below the surface of the water, seemingly in pursuit of the little fish which were very numerous in the pool. The snake soon coiled up under some brush at the edge of the pool, and there we captured it. On the morning of March 30, 1912, we were walking along the banks of the Santa Cruz River hunting frogs, when we heard a cry similar to that of a young kitten.

As we drew nearer indistinct though loud croaking sounds could be heard at intervals interspersed with the kitten-like cries. Soon we discovered a garter snake (No. 33877) of this species coiled up on shore a couple of feet from the edge of the water holding in its jaws a *Rana pipiens,* which it had seized by one hind leg, and which was crying lustily. When we approached still closer, the snake dropped the frog and both made for the water, which the frog succeeded in reaching.

No. 33876, was colored in life as follows: The head above is clear olive. The supralabials are straw yellow, the anterior and posterior ones tinged with olive, and all showing posterior edgings of black. The oculars are yellowish olive. The dorsal line is bright ochre anteriorly, becoming dull yellow on the posterior half of the body. The laterals lines are olive yellow on the neck, but posteriorly become grayish yellow and then cream or grayish white. Nuchal blotches are blackish, but are not very evident. The area between the dorsal and lateral lines is clear olive brown, with two rows of nearly concealed blackish blotches separated by concealed light greenish white areas on the skin between the scales. The lower laterals and tips of the gastrosteges are olive brown, a little lighter than the area between the stripes. The lower surfaces are yellowish white on head and neck, grayish or olive white elsewhere, the gastrosteges with concealed black markings laterally.

71.—**Thamnophis angustirostris** (Kennicott)

Eighteen of these snakes were collected at Oak Creek, Coconino County, Sept. 1–4, 1912. Oak Creek is a mountain stream running through a deep canyon with many oak trees. Perhaps a thousand feet above the stream is the pine forest of the plateau. These snakes were found in the stream, either on rocks or in the water.

All have 21–19–17 scale rows. The posterior genials are either equal to or longer than the anterior.

No. 35248 has the anal divided. The loreals are 1–1 except in No. 35249, which has two on one side of the head. Variation in other scale characters is shown in the following table:

No.	Gastrosteges	Urosteges	Supralabials	Infralabials	Preoculars	Postoculars	Temporals
35238	175	85	8—8	10—10	2—2	3—3	1+1+2—1+1+3
35239	165	69	8—8	9—9	2—2	3—3	1+1+1—1+1+3
35240	170	82	8—7	9—10	2—2	3—3	1+2+3—1+1+3
35241	170	84	8—9	9—10	2—2	3—3	1+2+2—1+1+2
35242	166	72	8—8	10—10	2—2	3—3	1+1+2—1+1+2
35243	165	75	8—8	10—10	2—2	3—4	1+1+3—1+1+3
35244	177	87	8—8	9—10	2—2	3—3	1+1+3—1+2+3
35245	171	85	8—8	10—X	3—2	3—4	1+1+3—1+2+3
35246	166	73	8—9	9—10	2—2	3—4	1+1+2—1+2+2
35247	172	80	8—8	10—10	2—2	3—4	1+1+3—1+1+3
35248	161	72	8—8	10—10	2—2	3—4	1+1+3—1+1+2
35249	172	83	8—8	10—10	2—2	3—4	2+2+3—1+2+3
35250	173	86	8—8	10—10	2—2	3—3	1+1+2—1+1+3
35251	176	87	8—7	9—9	2—2	3—3	1+1+3—1+2+3
35252	167	80	8—8	10—10	2—2	3—4	1+1+3—1+2+3
35253	165	83	8—8	10—10	2—3	3—4	1+2+3—1+1+3
35254	166	86	7—7	9—9	2—2	3—3	1+1+3—1+1+3
35255	161	74	8—8	9—9	2—2	3—3	1+1+3—1+1+4

72.—**Trimorphodon lyrophanes** Cope

One specimen was obtained from Professor Brown. It is labeled Rosemont, Pima County. It is No. 33846, and has scales in 21 rows, gastrosteges 234, anal divided, urosteges 56+, supralabials 7–7, infralabials 10–11, preoculars 2–2, postoculars 3–3, temporals 2+3–3+4, loreal 2–2, posterior genials shorter. There are thirty-seven dark dorsal blotches, of which nine are on the tail.

73.—**Tantilla nigriceps** Kennicott

A species of *Tantilla* was found to be fairly common along the Santa Cruz River near Tucson, where eleven specimens were collected between March 26 and April 1. One (No. 34171) was secured in Ventana Canyon, near the base of the Catalina Mts., April 28, 1912. They are much smaller than *Tantilla wilcoxi,* and have fewer gastrosteges and no posterior dark border on collar. These twelve specimens agree in having scales in 15 rows, preoculars 1–1, temporals 1–1, supralabials 7–7, infralabials 7–7, anal divided, posterior genials shorter. Other scale counts are:

Number.	Gastrosteges.	Urosteges	Postoculars.
33879	135	58	2–2
33880	140	58	2–2
33881	141	26+	2–2
33882	142	51	2–2
33883	135	64	2–2
33884	143	58	1–1
33885	140	62	2–2
33886	141	64	2–2
33887	148	51	2–2
33888	143	62	2–2
33889	142	59	2–2
34171	135	53	2–2

The first infralabials of all these specimens are separated by the mental.

The collar in all is from one to three rows of scales behind the parietals, is from one to one and a half rows of scales in width, and is not edged with darker scales. The lower surfaces are suffused with coral-red.

Although the type of *T. wilcoxi* was recorded by Cope as *T. nigriceps,* it is probable that the latter has not hitherto been taken in Arizona.

This Arizonan *Tantilla* is readily distinguished from the Californian *Tantilla eiseni* by its smaller number of gastrosteges (135 to 148 as against 167 to 181 in *T. eiseni). Tantilla planiceps* from Lower California has only 138 to 140 gastrosteges, but the white nuchal collar is on the sixth and seventh rows of scales behind the parietals. *Tantilla wilcoxi* has a larger number of gastrosteges (148 to 157) and the white collar crosses the parietals.

No. 33885 was colored in life as follows: Upper surface of head dark olive, becoming blackish brown posteriorly. Labials, lower surface of head and neck to sixth gastrostege, tips of all gastrosteges, and two or three rows of lateral scales on each side, grayish white. Upper surfaces (except of head) unicolor, light yellowish hair-brown or brownish straw. Rest of lower surfaces from sixth gastrostege to tip of tail bright coral red.

74.—**Tantilla wilcoxi** Stejneger

The only example of this species secured is a fine large specimen removed from the stomach of a *Diadophis regalis*

caught in Ramsey Canyon, Huachuca Mts., July 29, 1912. It is No. 34757, and has scales in 15 rows, gastrosteges 157, anal divided, urosteges 58, superlabials 7–7, infralabials 7–6, preoculars 1–1, postoculars 2–2, temporals 1+1, posterior genials shorter. The white collar crosses the posterior portion of the parietals and about two rows of scales on the neck. It is about as wide as the length of three scales, and is bordered behind by a dark band about the width of one scale row, and is similarly edged with dark anteriorly. The first infralabials just meet on the midline. The color below is coral-red.

This species may be distinguished from *T. nigriceps* by the position of the light collar, the larger number of gastrosteges, and the meeting of the first infralabials.

The specimen collected in the Huachucas by Mr. Price, August 20, 1893, originally recorded by me (Proc. Cal. Acad. Sci. (2), VI, 1896, p. 346), as *T. coronata* has only 148 gastrosteges, while Dr. Stejneger's type has 152.

75.—**Elaps euryxanthus** Kennicott

Nos. 35324 and 33837 from Tucson, and No. 33845 from Rosemont, Pima County, were presented by Professor Brown, while No. 35326 was secured from the Carnegie Desert Laboratory at Tucson.

No. 33837, from the University Campus, Tucson, May 31, 1905, has scales in 15 rows, supralabials 7–7, infralabials 7–7, preoculars 1–1, postoculars 2–2, temporals 1+2, black bands on body and tail 14.

No. 35324, Tucson, has scale rows 15, gastrosteges 216, anal divided, urosteges 29, supralabials 7–7, infralabials 6–6, preoculars 1–1, postoculars 2–2, temporals 1+2, black bands on body and tail 12, yellow 22, red 10.

No. 33845, Rosemont, Sept. 22, 1902, has scale rows 17, gastrosteges 224, anal divided, urosteges 24, supralabials 7, infralabials 8, preocular 1, postoculars 2, temporals 1–2, black bands on body and tail 13, yellow 24, red 11.

No. 35326, Tucson, has scale rows 15, anal divided, urosteges 25, black bands on body and tail 9, yellow 19, red 9.

77.—**Crotalus molossus** Baird and Girard

Seven specimens of this rattlesnake are in the collection. One (No. 17535) was collected, April 4, 1910, at Cave Creek, Maricopa County. The others are from the Huachuca Mts., in Cochise County.

No. 17535, Cave Creek, has scale rows 27, gastrosteges 191, anal entire, urosteges 25, two divided, supralabials 17–18, infralabials 17–18, preoculars 2–2, postoculars 3–3, loreal 2–3,

No. 34735, near Ramsey Canyon, Huachuca Mts., June 29, 1912, female, has scale rows 27, gastrosteges 189, anal entire, urosteges 22, supralabials 17–18, infralabials 16–16, preoculars 2–2, postoculars 3–3, loreal 1–1.

No. 34736, head of Ramsey Canyon, July 11, 1912, has scale rows 27, gastrosteges 190, anal entire, urosteges 23 two divided, supralabials 17–17, infralabials 15–16, preoculars 2–2, postoculars 3–3, loreal 1–1.

No. 34737, Ramsey Canyon, July 30, 1912, has scale rows 27, gastrosteges 193, anal entire, urosteges 21, supralabials 17–17, infralabials 18–18, preoculars 2–2, postoculars 3–3, loreal 1–1.

No. 34738, Ramsey Canyon, July, 1912, has scale rows 27, gastrosteges 191, anal entire, urosteges 27, supralabials 16–17, infralabials 17–18, preocular 2–2, postoculars 3, loreal 1–1.

No. 34739, Miller Canyon, Huachuca Mts., July 27, 1912, female containing seven young, has scale rows 27, gastrosteges 191, anal entire, urosteges 23, supralabials 17–18, infralabials 16–18, preoculars 2–2, postoculars 3–3, loreal 1–1.

No. 34740, Ramsey Canyon, July 28, 1912, has scale rows 27, gastroteges 194, anal entire, urosteges 20 two divided, supralabials 18–18, infralabials 17–18, preoculars 2–2, postoculars 3–3, loreal 1–1.

78.—**Crotalus atrox** Baird and Girard

The collection includes one specimen (No. 33656) from Yuma, Sept. 14, 1912, six (Nos. 17532, 17533, 17534, 17536, 17537, 17538) from Cave Creek, Maricopa County, April 10–May 15, 1910, and ten from the vicinity of Tucson, April 11–August 23, 1912. These all show the typical coloration. Their scale characters are shown in the following table:

No.	Scale rows	Gastrosteges	Urosteges	Supralabials	Infralabials	Preoculars	Postoculars	Loreal
33656		183	24 (1÷)	15—16	17—17	2—2	3—3	1—1
17532	27	188	22 (1÷)	15—15	16—16	2—2	3—3	1—1
17533	27	186	18 (4÷)	15—15	16—17	2—2	3—3	1—1
17534	25	184	23 (0÷)	14—14	16—16	2—2	3—3	1—1
17536	27	185	18 (2÷)	15—17	18—19	2—2	3—3	1—1
17537	25	185	21 (5÷)	16—16	16—16	2—2	3—3	1—1
17538	27	182	24 (10÷)	14—15	16—17	2—2	3—3	1—1
33873	25	179	24 (3÷)	15—15	15—15	2—2	3—3	1—1
34265	27	183	23 (1÷)	15—16	17—17	2—2	3—3	1—1
34266	25	187	19 (3÷)	15—15	17—18	2—2	3—3	1—1
34267	25	183	26 (5÷)	16—16	18—18	2—2	3—3	1—1
34268	25	183	24 (1÷)	14—14	16—17	2—2	3—3	1—1
34269	25	181	27 (0÷)	14—14	14—15	2—2	3—3	1—1
34270	27	190	21 (1÷)	15—17	16—16	2—2	3—3	1—1
34271	25	184	25 (4÷)	15—14	17—17	2—2	3—3	1—1
34273	25	185	19 (2÷)	15—15	16—18	2—2	3—3	1—1
35297	25	183	24 (0÷)	15—16	18—18	2—2	3—3	0—0

79.—**Crotalus tigris** Kennicott

This species seems to be quite rare in southern Arizona. We secured only one specimen (No. 34274) near the steam pump about eighteen miles north of Tucson, May 8, 1912. This one was caught about four p. m. just as it was entering a hole in the ground. *Crotalus atrox* was common in the same locality.

The scale rows are 25, gastrosteges 165, anal entire, urosteges 20, supralabials 14–14, infralabials 14–15, preoculars 2–2, postoculars 2–3, loreals 1–1. There are forty dark bars on the body and five on the tail.

80.—**Crotalus confluentus** Say

We refer to this species one specimen (No. 17531) from Cave Creek, Maricopa County. The coloration in life was greenish. In alcohol it is pale and resembles *C. atrox*. The bands on the tail are pure black on a light ground as in *C. atrox*. On the posterior portion of the body the rhombs become cross-bars. The lower surfaces are white, unmarked. The head markings are somewhat faded, but in position and character are those of *C. confluentus,* with which species it agrees in scale characters.

It has scales in 25 rows, gastrosteges 177, anal entire, urosteges 19, two divided, supralabials 16–16, infralabials 16–

16, preocular 2–2, postoculars 3–3, loreal 1–1, dark markings on body are 26 rhombs and 12 cross-bars to anus, 4 black bands on tail.

81.—**Crotalus oregonus** Holbrook

We have three Arizonan specimens of the Pacific Rattlesnake. One is a young specimen (No. 35237) from Oak Creek, Coconino County, Sept. 2, 1912. The coloration of head, body, and tail is perfectly typical of this species. The scales are in 23 rows, gastrosteges 165, anal entire, urosteges 24, supralabials 15–15, infralabials 15–15, preoculars 2–2, postoculars 3–3, loreals 1–1, dark dorsal markings on body 38.

No. 17539, is a large adult secured at Cave Creek, Maricopa County, May 1, 1910. Its head is unicolor above and on sides, dark brown without any trace of markings. The dorsal rhombs are somewhat indistinct, and number 33 on the body to the tail, which bears six brown cross-bars. The lower surfaces are mottled with brown. The scale rows are 25, gastrosteges 170, anal entire, urosteges 24, supralabials 15–15, infralabials 14–15, preoculars 2–2, postoculars 3–3, loreal 1–1.

No. 34683, caught at an altitude between 7000 and 8000 feet at the Wilderness of Rocks, on Mt. Lemon, Santa Catalina mountains, Pima County, June 12, 1912, has dorsal rhombs solid jet-black without lighter centers, but separated from each other by bright sulphur yellow edgings. The sides are brownish drab with dark brown markings and a few scattered yellow scales. The lower surfaces are yellowish white marbled with dark brown. There are eight dark brown rings on the tail, separated by narrow dark gray intervals. The head markings are as in typical *C. oregonus*. Scale rows 25, gastrosteges 170, anal entire, urosteges 25 one divided, supralabials 16–16, infralabials 15–15, preoculars 2–2, postoculars 3–3, loreals 1–1, dorsal rhombs to tail 31.

When we reached Tucson we heard much of the black rattlesnake of the Catalinas, as this species is locally known. It was with much difficulty that we secured a specimen (No. 34683). There can be no doubt that it is specifically identical with *C. oregonus* of California. Whether it will be necessary to regard the dark Arizona snakes as a subspecies, *C. oregonus cerberus* (Coues), cannot be decided until more specimens are

received. The lighter specimens from Cave and Oak creeks make us doubt the wisdom of using a distinct name for these snakes. *Crotalus oregonus* probably occurs in Arizona only at considerable altitudes.

82.—**Crotalus cerastes** Hallowell

This rattlesnake was found by us near Yuma, where five were secured.

No. 33450, March 15, 1912, adult, found coiled in the mouth of a hole under a cactus.—Scale rows 21, gastrosteges 145, anal entire, urosteges 21, none divided, supralabials 12–12, infralabials 13–13, preoculars 2–2, postoculars 3–3 loreals 1–1.

No. 33448, March 17, 1912, young, found crawling under a bush.—Scale rows 23, gastrosteges 139, anal entire, urosteges 21, five divided, supralabials 12–12, infralabials 12–12, preoculars 2–2, postoculars 3–3, loreals 1–1.

No. 33449, March 17, 1912, young, found coiled in the mouth of a hole.—Scale rows 23, gastrosteges 143, anal entire, urosteges 23, one divided, supralabials 13–13, infralabials 13–13, preoculars 2–2, postoculars 3–3, loreals 1–1.

No. 33654, Sept. 16, 1912, adult, caught on the desert at night.—Scale rows 21, gastrosteges 146, anal entire, urosteges 15, one divided, supralabials 12–12, infralabials 13–13, loreals 1–1.

No. 33655, Sept. 12, 1912, young, found under a tin can on desert.—Scale rows 21, gastrosteges 146, anal entire, urosteges 16, two divided, supralabials 13–13, infralabials 13–13, preoculars 2–2, postoculars 3–3, loreals 1–1.

No. 33448 contained a *Uta stansburiana,* while No. 33449 had eaten a *Cnemidophorus tigris.*

83.—**Crotalus mitchellii** Cope

Two bright red specimens of this species were secured by Mr. Carlson at Cave Creek, Maricopa County: No. 17540 on April 16, and No. 20814 on May 25, 1910.

No. 17540 has scale rows 23, gastrosteges 163, anal entire, urosteges 18, none divided, supralabials 15–15, infralabials 14–16, preoculars 2–2, postoculars 3–3.

No. 20814 has scale rows 25, gastrosteges 169, anal entire, urosteges 21, three divided, supralabials 15–17, infralabials

16–17, preocular 2–2, postoculars 3–3.

Mr. Herbert Brown sent us two white rattlesnakes of this species collected by Dr. W. J. McGee in the Tinajas Atlas Range about fifty miles southeast from Yuma. Unfortunately they were destroyed in the great fire of April, 1906.

84.—**Crotalus lepidus** Kennicott

The only specimen secured was found crawling up a granite boulder on the hillside above Carr Canyon, Huachuca Mts., July 17, 1912. In life the coloration was light green, with light brown bands. No. 34747 has scale rows 21, gastrosteges 162, anal entire, urosteges 24, none divided, supralabials 11–12, infralabials 11–12, preoculars 2–2, postoculars 2–2, loreals 2–2.

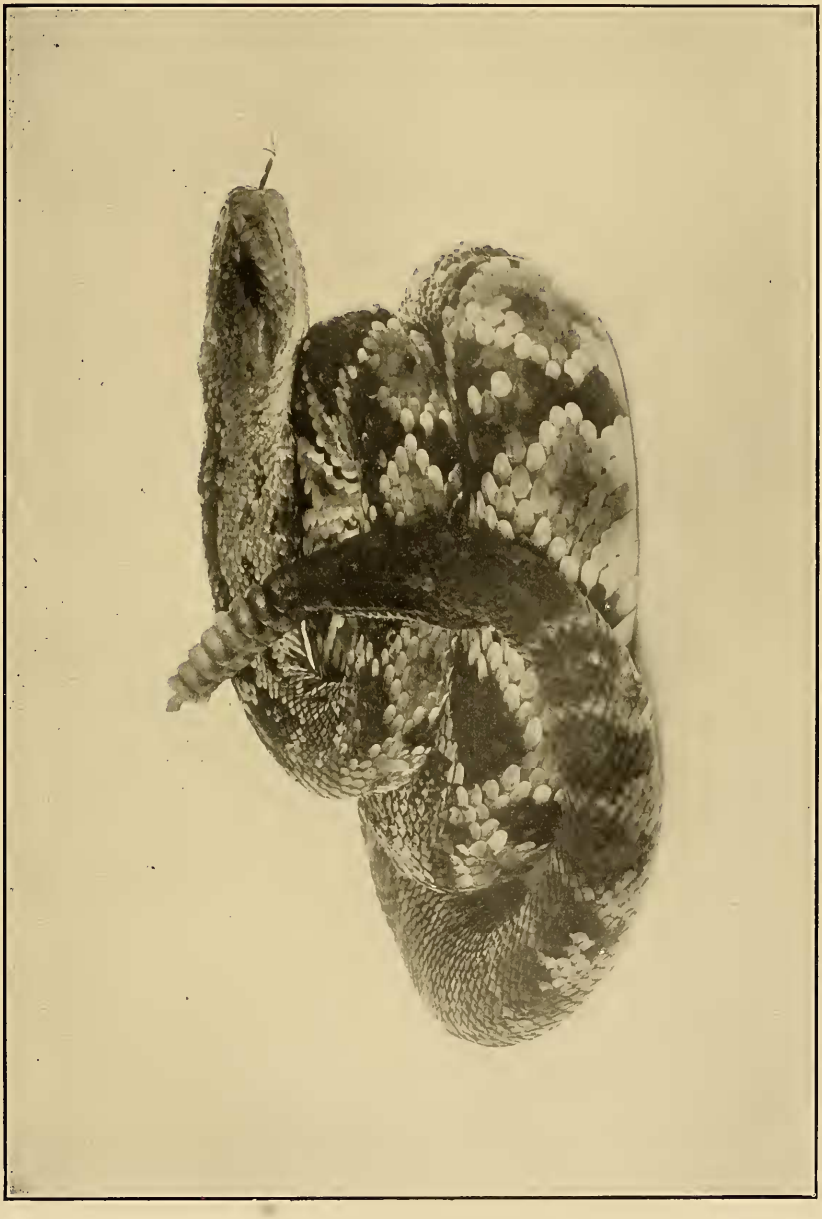
85.—**Crotalus pricei** Van Denburgh

The only specimen of this handsome little rattlesnake was found in the bed of a stream in Ramsey Canyon, Huachuca Mts., July 16, 1912. It is No. 34748, and has scales in 21 rows, gastrosteges 154, anal entire, urosteges 24, nine divided, supralabials 9–9, infralabials 10–10, preoculars 2–2, postoculars 3–3, loreals 2–2, coloration typical.

Mr. Herbert Brown sent me for examination a fine specimen found by Mr. W. B. McCleary, May 28, 1912, on a rock at an altitude of about 7500 feet, on a ridge near Old Baldy, Madero Canyon, Santa Rita Mts., Santa Cruz County. This snake has scales in 23–21–21–21–19–17 rows, gastrosteges 153, anal entire, urosteges 25, the last seven divided, supralabials 9–9, infralabials 10–10, spots along back to anus 48 on right, 56 on left, 8 dark bars on tail. Length to anus 395 mm., of tail 38 mm. to rattle. Rattle 17 mm. complete with seven segments.

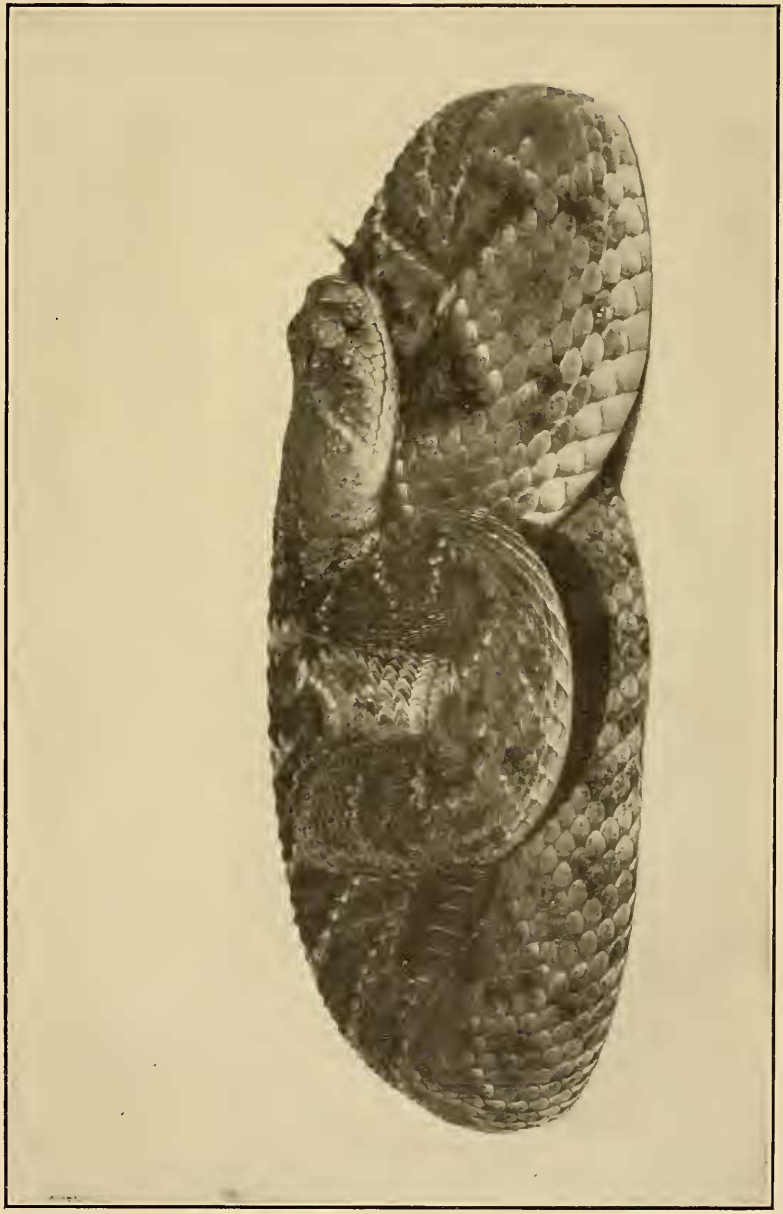
EXPLANATION OF PLATE XVII

Crotalus molossus Baird and Girard: BLACK-TAILED RATTLESNAKE—Photograph from alcoholic specimen (No. 34738) collected in Ramsey Canyon, Huachuca Mountains, Arizona, July, 1912.



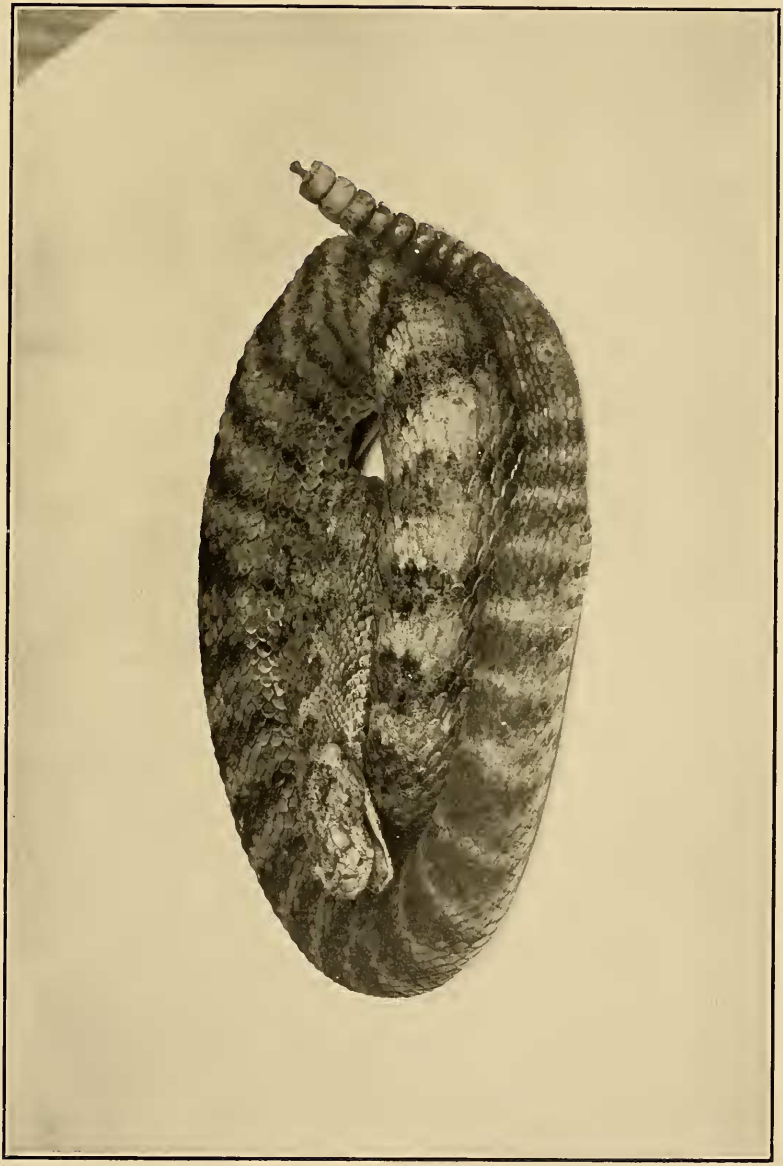
EXPLANATION OF PLATE XVIII

Crotalus atrox Baird and Girard: DESERT DIAMOND RATTLESNAKE—Photograph from living specimen (field No. 1011) collected near Tucson, Arizona, August, 1912.



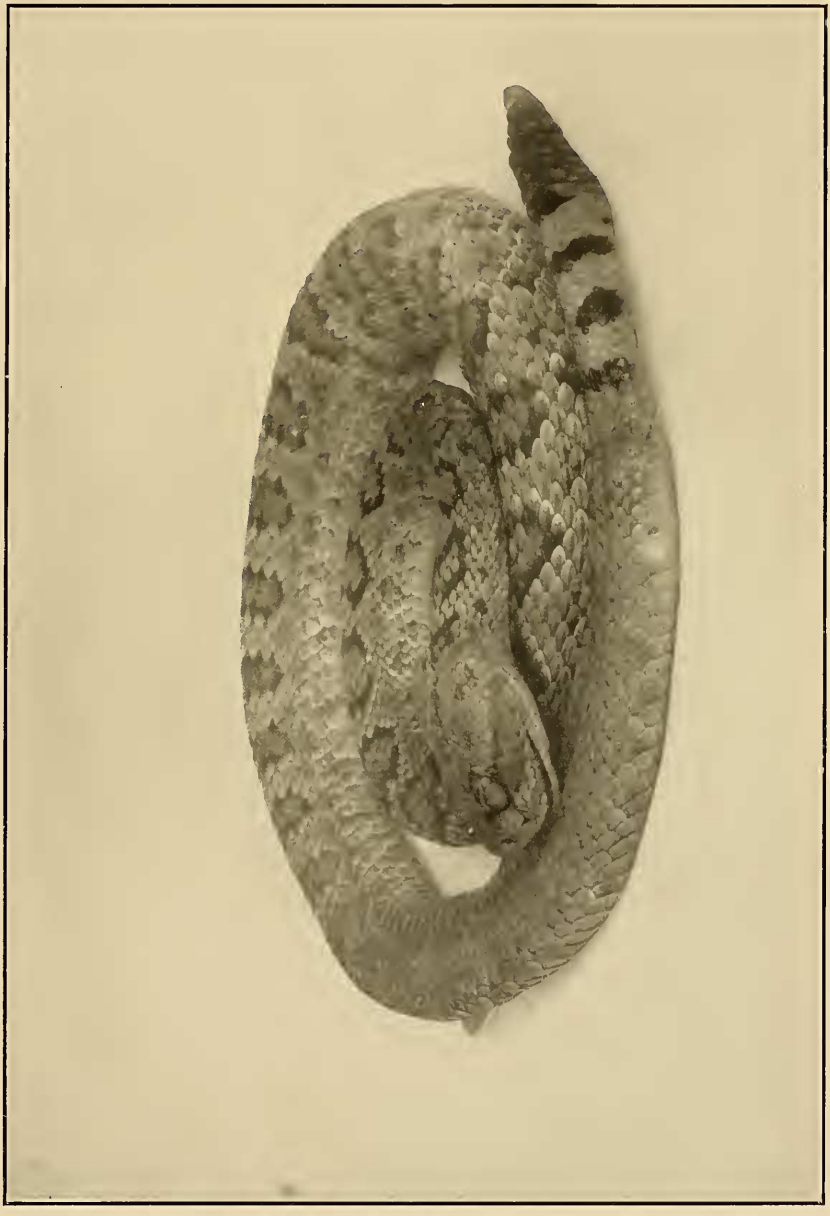
EXPLANATION OF PLATE XIX

Crotalus tigris Kennicott: Tiger Rattlesnake—Photograph from alcoholic specimen (No. 34274) collected near the Steam Pump eighteen miles north of Tucson, Arizona, May 8, 1912.



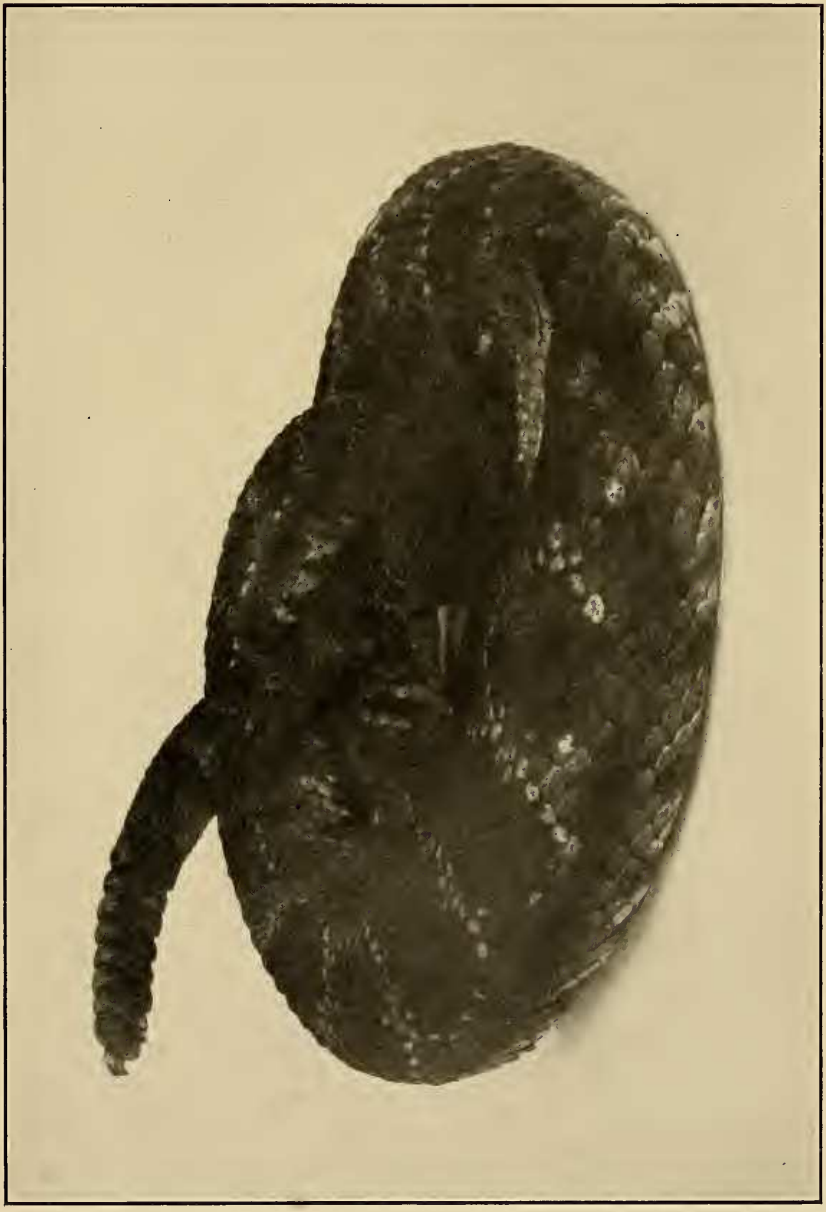
EXPLANATION OF PLATE XX

Crotalus confluentus Say: Prairie Rattlesnake—Photograph from alcoholic specimen (No. 17531) collected at Cave Creek, Maricopa Co., Arizona, in 1910.



EXPLANATION OF PLATE XXI.

Crotalus oregonus Holbrook: Pacific Rattlesnake—Photograph from alcoholic specimen (No. 34683) collected on Mt. Lemon, Santa Catalina Mountains, Arizona, June 12, 1912.



November 3, 1913

EXPLANATION OF PLATE XXII

Crotalus cerastes Hallowell: Horned Rattlesnake—Photograph from living specimen (No. 33655) collected at Yuma, Arizona, Sept. 12, 1912.